Neoaiptasia commensali, gen. et. sp. nov.: an actiniarian commensal of hermit crabs

BY

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(*With three text-figures*)

While describing the intertidal sea anemones of Bombay (Parulekar 1968), a few specimens, found attached to gastropod shells, inhabited by hermit crabs, were provisionally assigned to *Aiptasia* sp. However, a detailed examination of a number of specimens and a study of literature, shows that the species is of a genus, so far unknown. The new genus and species are described in the following pages.

Neoaiptasia gen. nov.

Diagnosis: Aiptasiidae with broad, adherent basal disc. Column smooth, undifferentiated and without cinclides. Tentaculate margin. Sphincter mesogloeal, fairly well developed. Tentacles slender, always smooth without any projections or protuberances. Mesenteries not differentiated into macro- and microcnemes; first two cycles (12 pairs) perfect and sterile. Same number of mesenteries proximally as well as distally. Acontia with basitrichs and microbasic p-mastigophores. Cnidom: spirocysts, microbasic p-mastigophores, microbasic b-mastigophores and basitrichs.

Type Species: *Neoaiptasia commensali*

Neoaiptasia commensali sp. nov.

Material: Holotype collected from Chaupatty, Bombay (19°58′N., 72°53′E.) India, on 17th September 1967, in littoral zone. Paratypes: five in number, collected from Chaupatty, Bombay and also from Padamgad, Malvan (16°03′N., 73°28′E.) in Ratnagiri District of Maharashtra State, India. Both the holotype and the paratypes will be deposited in the collections of Zoological Survey of India, Calcutta.

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Description

General Features : This medium-sized acontiarian is characteristic of sandy shores. It is almost always found attached to gastropod shells, either singly or in groups of 2-4 (Fig. 1). The shells (*Babylonia spirata*, *Thais carinifera*, *Turritella duplicata*, *Surcula javana* and rarely *Tibia curta*) are inhabited by hermit crabs, usually *Diogenes custus* or sometimes *Clibanarius padavensis*. A few anemones were also found attached to pelecypod shell of *Placenta placenta*. Occasionally, the aberrant gastropod, *Ergoea walshii*, is present on the outer lip of the gastropod shell, and rarely the polynoid *Gattayana deludens*, also inhabits the apical whorls of the shell. The colour of the actiniarian exactly matches that of the shell, so that when the anemone is in contraction, it becomes completely flat, with slight elevation near the oral region. The species is quite common during the monsoon (June-September).

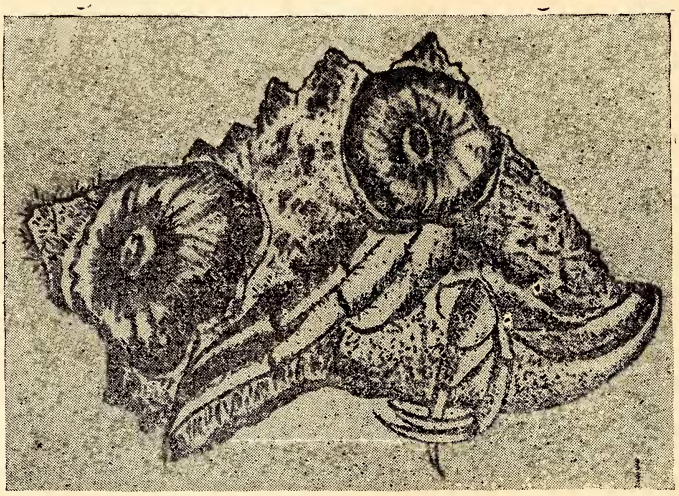

Fig. 1. Showing *Neoaiptasia commensali*, gen. et. sp. nov. on molluscan shell holding hermit crab.

Size : Shape and dimensions vary, depending on the state of expansion and also the type of substratum, to which the anemone is attached. In well expanded specimens on the shell, the size range is as follows :

Length of column—15-45 mm.
Diameter of column—5-17 mm.
Diameter of Oral Disc—20-35 mm.
Diameter of Basal Disc—20-38 mm.

Colour : Column, generally, yellowish-brown with squarish design or irregular patches or longitudinal stripes. Both the oral and the basal discs colourless, whereas, tentacles have transverse black stripes or rings.

Acontia, usually white but, at times, light-pink or flesh-coloured while the septal filaments are always white.

Basal Disc : Strongly adhesive, colourless, translucent and irregular in outline, when attached to the shell. In a well-preserved specimen, it has a circular outline. No cuticular modifications. Radial lines of mesenterial insertions, clearly visible through the wall of the disc.

Column : More or less cylindrical, not very elongated and with tentaculate margin. It is not divisible into scaphus and capitulum. Cinclides absent and, hence, the acontia are ejected out through the stomodeum. In some specimens, the colour of the column is evenly spread with a design of minute squares, whereas, in others there are irregular patches or longitudinal stripes. The ectoderm of the column is made up of high columnar cells with numerous nematocysts. Mesogloea quite thick, containing a number of fibres on the inner side and few cells on the outer side. The endoderm is made up of high columnar cells with few mucus cells and nematocysts.

Oral Disc and Actinopharynx : Oral disc is almost as wide as the basal disc, less circular in outline, with radial lines of insertions of mesenteries, clearly visible through the colourless, translucent body wall. Stomodeum sometimes elevated and with protruding lips. Actinopharynx with longitudinal shallow grooves. Siphonoglyphs two in number, always associated with directive mesenteries. Ectoderm of the actinopharynx high, containing a number of gland cells and nematocysts.

Marginal sphincter : Fairly well developed, mesogloeal and transversely stratified. It is broad at its upper part and gradually tapering downwards (Fig. 2).

Tentacles : Short, tapering with transverse stripes or dark rings formed by the algae in the endoderm. Tentacles are arranged hexamerously, in six cycles of $6+6+12+24+48+96=192$ and almost equal in length. Ectoderm of the tentacle rather thick, containing mucus cells and nematocysts. Endoderm thin in the basal part and becoming thicker towards the tip. Mesogloea thin, with numerous fibres and few undifferentiated cells.

Mesenteries : Not divisible into macro- and microcnemes and are arranged, in cycles of $6+6+12+24=48$. First two cycles i.e. 12 pairs, are perfect, sterile and with septal filaments and acontia. Third cycle of mesenteries, fertile, with septal filaments and acontia whereas the last cycle with gonads but without septal filaments and acontia. Some mesenteries distally as well as proximally. Acontia more than twice as thick as filaments and are characterized by the presence of large nematocysts. Retractor muscles diffuse, strong on the older mesenteries than on the younger ones (Fig. 3). Basilar muscles are distinct whereas parietobasilar ones are rather weak.

Sexes separate and can be distinguished in live anemone, by the colour of the gonad. Male gonad light-violet whereas female gonad yellowish or pinkish-orange in colour.

Fig. 2. Longitudinal section of marginal sphincter of *Neoaiptasia commensali*, gen. et. sp. nov.

Cnidom : Cutress (1955) is followed for the classification of nematocysts. The distribution and size (in microns) of different categories of nematocysts, are as follows :

Tentacles	
Spirocysts	9·8-21×1·4-2·8
Basitrichs	12·6-15·4×1·4
Microbasic P-mastigophores	19·6-21×4·2
Microbasic P-mastigophores	11·2-12·6×2·8
Column	
Basitrichs	19·6×4·2
Basitrichs	14×1·4
Actinopharynx	
Microbasic b-mastigophores	11·0-15·2×2·0-2·5
Microbasic p-mastigophores	18·2-26·6×4-4·5
Acontia	
Basitrichs	12·6-15·4×1·4-2·1
Microbasic p-mastigophores	36·4-43·5×6·3-7

Septal Filaments

Microbasic b-mastigophores	5·6-7×3·5
Microbasic p-mastigophores	15·4-16·8×3·5-4·2

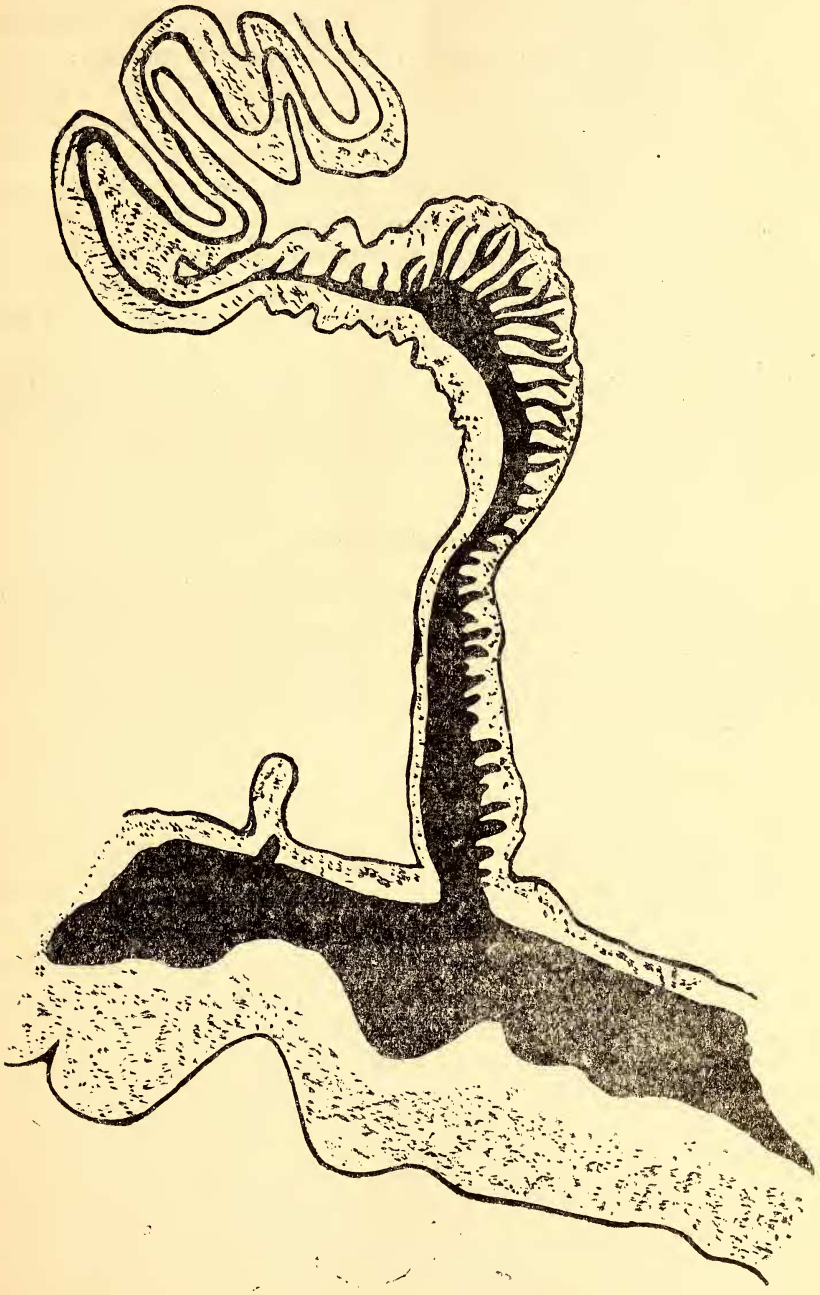

Fig. 3. Transverse Section of a perfect and imperfect mesentery of *Neoaiptasia commensali*, gen. et. sp. nov.

Remarks

The new genus possesses such characters, which makes its taxonomic position, rather difficult to settle. The presence of basitrichs and microbasic p-mastigophores in the acontia together with undifferentiated mesenteries, clearly indicates, that it is of the family Aiptasiidae. However, certain characters, such as, absence of cinclides, 12 pairs of perfect, sterile mesenteries etc. separate it from all the other members of Aiptasiidae, and in lacking cincirdes, 12 pairs of perfect, sterile mesenteries and fairly well-developed mesogloeal sphincter, the new genus closely resembles members of the family Sagartiomorphidae. Hence, at present, it seems that the genus *Neoaiptasia* is intermediate, in position between Sagartiomorphidae and Aiptasiidae and with better knowledge of the genus, it may become necessary, in future, to accommodate it in a new family.

Among the existing genera of Aiptasiidae, *Neoaiptasia*, exhibits relationship to *Aiptasia*. The common character, being the presence of smooth tentacles without any projections or protuberances.

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